Remarks

Overview

In the Office Action under reply, the following rejections have been set forth:

Claims 1-9 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite;

Claims 1-3, 6, 7, and 9 stand rejected under 35 U.S.C. §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Bawendi et al. (U.S. Pat. No. 6,319,426);

Claims 4 and 5 stand rejected under 35 U.S.C. §103(a) as obvious over Bawendi et al. (U.S. Pat. No. 6,319,426) in view of Powers et al. (U.S. Pat. No. 5,162,445); and

Claim 8 stands rejected under 35 U.S.C. §103(a) as obvious over Bawendi et al. (U.S. Pat. No. 6,319,426).

The above rejections are addressed in part by the present amendments and are otherwise traversed by the arguments set forth below.

Amendments to the Claims and Claims Status

By the foregoing amendment, claim 1 has been amended to recite that the admixture formed is "an admixture of dispersant and nanoparticles in the solvent." Support for this amendment follows from the claim language itself, as well as from the description in the specification (e.g., at page 22 in paragraph [000101].

No new matter has been added by this amendment.

With the above amendment, Claims 1-9, as amended, remain pending. No claims have been canceled or added.

Rejections under 35 U.S.C. §112, second paragraph

Claims 1-9 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Applicants traverse this rejection for at least the following reasons.

As stated in the Office Action, the basis for this rejection appears to result from the concern about whether the "dispersant and nanoparticles, singly or both, form a solution or just an admixture which is further subjected to step (b)." Applicants respectfully disagree that the language of the claims causes any confusion as to the meaning of the claims for one of ordinary skill in the art.

Specifically, claim 1 recites, for step (a), the active step of admixing the dispersant and the nanoparticles in a solvent. The result of this step, as is further recited in the claim, is to "produce an admixture of dispersant and nanoparticles in the solvent." Clearly, an admixture is formed from this method step, i.e., "of dispersant and nanoparticles in the solvent," such that the admixture includes both the dispersant and the nanoparticles.

Applicants also note that the suggestion that the dispersant or nanoparticles may "singly" form a "solution or just an admixture" certainly does not follow from the language of claim 1 inasmuch as the claim clearly recites an "admixture of dispersant and nanoparticlesin the solvent."

For at least the foregoing reasons, applicants submit that the meaning of the claims is clear. Withdrawal of the second paragraph rejection is requested.

Rejections under 35 U.S.C. §102 and/or §103

Claims 1-3, 6, 7, and 9 stand rejected under 35 U.S.C. §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Bawendi et al. (U.S. Pat. No. 6,319,426).

Applicants respectfully traverse this rejection for at least the following reasons.

At the outset, applicants note that Bawendi et al. was cited as a basis for rejection of applicants' claims in the parent application. However, in that application, the claims were deemed to be allowable over this reference due to a clear distinction between the claim features and the invention of Bawendi et al.- specifically, applicants provision in the claims for a dispersant having at least two hydrophobic regions and at least two hydrophilic regions.

By comparison, the present divisional application includes the same aspect of applicants' invention already deemed to be allowable in the parent application, i.e., a dispersant having "two or more hydrophobic regions and two or more hydrophilic regions." Since this same issue has already been considered by the Patent Office in the same application family, and determined to warrant the allowance of applicants' claims, it should be given full faith and credit in the present application. (See, e.g., MPEP §706.04).

With regard to Bawendi et al., it is indicated in the Office Action that the "outer layer includes any molecule having at least one hydrophobic linking moiety that attaches to the surface of the particle and that terminates in at least one hydrophilic moiety" (citing column 13, lines 5-28, emphasis added) and that the "outer layer may be comprised of a block copolymer having at least one hydrophilic and hydrophobic functionalities (citing column 15, lines 55-67 and column 16, emphasis added). Applicants respectfully disagree that this assessment is a proper reading of Bawendi et al.

Specifically, the information relied upon, and noted in the Office Action by citation to specific parts of the reference, does not support the conclusion that this reference discloses a molecule (generally, or more particularly, a polymer) having "two or more hydrophobic regions and two or more hydrophilic regions" as required by applicants' claims.

For example, in reference to column 13, lines 5-28, the actual pertinent text of the patent at column 13, lines 5-13 reads as follows:

> The outer layer includes a molecule having at least one linking moiety that attaches to the surface of the particle and that terminates in at least one hydrophilic moiety. The linking and hydrophilic moieties are optionally spaced apart by a hydrophobic region sufficient to prevent charge transfer across the region. The hydrophobic region also provides a "pseudo-hydrophobic" environment for the nanocrystal and thereby shields it from its aqueous surroundings.
> *(column 13, lines 5-12, underlining added)*

Clearly, this section of the patent refers to at least one linking moiety (not hydrophobic linking moiety, as stated in the Action), at least one hydrophilic moiety, and, optionally, a hydrophobic region. There is no disclosure of "two or more hydrophobic regions and two or more hydrophilic regions" as required by applicants' claims.

With regard to the information relied upon at column 15, lines 55-67, the pertinent part of this text of the patent reads as follows:

> the outer layer is comprised of a block copolymer that provides the requisite, linking, hydrophilic and hydrophobic functionalities. The copolymer includes at least a first block which contains a pendant group capable of functioning as a linking moiety and a second block having a pendant group capable of functioning as a hydrophilic moiety. The polymer backbone can function as the hydrophobic region. The linking and hydrophilic moieties can be directly attached to the hydrocarbon backbone or they can be attached through intermediary spacing groups.
> *(column 15, lines 55-67, underlining added)*

From the above, it is evident that the copolymer includes at least a first block having a pendant linking moiety and a second block having a pendant hydrophilic moiety. Although a hydrophobic region may be present (as the polymer backbone) there is clearly no mention of both "two or more hydrophobic regions and two or more hydrophilic regions" as required by applicants' claims.

In addition, in reference to the block copolymer discussed at column 16, it is evident that the information provided refers to an AB-type copolymer, e.g. as shown in the chemical structure at column 16, lines 10-17, in which two blocks are depicted having repeat units m and n and linking moieties X and hydrophilic moieties Y attached to the respective blocks. Nothing in this information, however, or the remainder of Bawendi et al., provides a disclosure of suggestion of applicants' claimed feature, namely "two or more hydrophobic regions and two or more hydrophilic regions."

To the extent that Bawendi et al. has also been relied upon, by itself, as a basis for rejection of applicants' claims under 35 U.S.C. §103(a), it is noted that the requisite feature of applicants' claims noted above is missing from this reference and has not been suggested as being an obvious modification of Bawendi et al. For at least this reason, applicants' claims are also not properly rejected under §103 since there is no motivation, nor reasonable expectation of success, in providing a modification of Bawendi et al.'s invention to suggest what applicant has claimed.

Applicants further note that the present invention is addressed to, and provides certain solutions to problems in the art, e.g., as described in the Background section of their application. Such benefits include providing a reliable, reproducible method for rendering hydrophobic semiconductor nanocrystals dispersible in aqueous media while preserving the quantum efficiencies of the original particles, maintaining colloidal stability, and avoiding or minimizing any change in particle size distribution. None of these benefits and/or solutions to problems in the art has been evidently provided by Bawendi et al.

For at least the foregoing reasons, Bawendi et al. fails to anticipate or render *prima facie* obvious applicants' claims.

Withdrawal of the rejection under 35 U.S.C. §102 and/or §103 is requested.

Rejections under 35 U.S.C. §103

Claims 4 and 5 stand rejected under 35 U.S.C. §103(a) as obvious over Bawendi et al. (U.S. Pat. No. 6,319,426) in view of Powers et al. (U.S. Pat. No. 5,162,445); and

Claim 8 stands rejected under 35 U.S.C. §103(a) as obvious over Bawendi et al. (U.S. Pat. No. 6,319,426).

Applicants respectfully traverse these rejections for at least the following reasons.

For reasons noted in the preceding section, Bawendi et al. fails to anticipate or render *prima facie* obvious applicants' claims since each and every feature of the claims is not disclosed or suggested. The same reasons are applicable here since nothing in the applied references suggests the missing feature required by applicants' claims. As such, claims 4, 5, and 8 are also allowable for the same reason, namely the failure of the applied references to disclose or suggest applicants' claimed feature of "two or more hydrophobic regions and two or more hydrophilic regions."

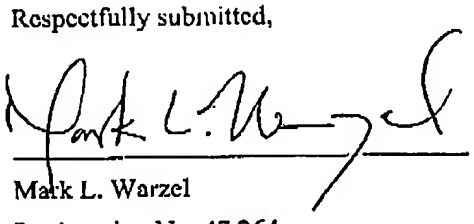
For at least the foregoing reasons, withdrawal of the above rejections under 35 U.S.C. §103 is requested.

Conclusion

Applicants respectfully submit that the present claims are in condition for allowance. An early notice of allowance is earnestly requested.

Should the Examiner need to clarify any remaining matters, or expedite the prosecution of the subject application, a telephone call to the undersigned at (650) 330-0900 would be appreciated.

Respectfully submitted,

By: 

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